

WHAT IS CLAIMED IS:

1 1. A data structure comprising:
2 a data descriptor record, wherein said data descriptor record includes
3 at least one addressing field, and
4 a type field, wherein
5 said type field is configured to indicate a data structure type of
6 a data storage structure, and
7 said data storage structure is a data structure described by said
8 data descriptor record.

1 2. The data structure of claim 1, wherein said at least one addressing field
2 comprises:
3 a base address field,
4 an offset field, and
5 a length field.

1 3. The data structure of claim 2, wherein
2 said data structure type is one of a contiguous buffer, a scatter-gather list and a
3 linked list structure.

1 4. The data structure of claim 2, wherein
2 said base address field is configured to store a base address,
3 said base address is a starting address of a secondary data structure associated
4 with said data descriptor record, and
5 said secondary data structure is said data storage structure.

1 5. The data structure of claim 2, wherein
2 said offset field is configured to indicate a starting address of data within a
3 secondary data structure pointed to by a base address stored in said
4 base address field, and
5 said secondary data structure is said data storage structure.

1 6. The data structure of claim 2, wherein
2 said length field is configured to indicate a length of data stored in a secondary
3 data structure pointed to by a base address stored in said base address
4 field, and
5 said secondary data structure is said data storage structure.

1 7. The data structure of claim 2, wherein said data descriptor record
2 further comprises:
3 a context field.

1 8. The data structure of claim 7, wherein said context field is configured
2 to store information regarding an address space type in which said data descriptor
3 record exists.

1 9. The data structure of claim 2, wherein said data descriptor record
2 further comprises:
3 an in-line data field, and
4 an in-line data buffer, wherein said data structure is said data storage
5 structure..

1 10. The data structure of claim 9, wherein said in-line data field is
2 configured to store information regarding said in-line data buffer.

1 11. The data structure of claim 10, wherein said information regarding said
2 in-line data buffer includes a value representing a length of said in-line data buffer.

1 12. The data structure of claim 11, wherein said length of said in-line data
2 buffer is capable of assuming only set values.

1 13. The data structure of claim 12, wherein said value assumes a non-zero
2 value to indicate that said in-line data buffer is used.

1 14. The data structure of claim 11, wherein said in-line data buffer is a
2 variable-length buffer.

1 15. The data structure of claim 10, wherein said in-line data buffer is
2 configured to store data contiguously with said data descriptor record.

1 16. A method of transferring data comprising:
2 storing said data in a first data structure, wherein
3 said first data structure is in a first data structure format,
4 said first data structure format is defined by a first data descriptor
5 record associated with a first process, and
6 said first data structure occupies a memory space;
7 passing a reference to said memory space from said first process to a second
8 process; and
9 reading said data from a second data structure using said reference, wherein
10 said second data structure is in a second data structure format,
11 said second data structure format is defined by a second data descriptor
12 record associated with said second process, and
13 said second data structure occupies at least a portion of said memory
14 space.

1 17. The method of claim 16, wherein said first and said second data
2 structures are co-extensive.

1 18. The method of claim 16, wherein said first and said second data
2 structure formats differ.

1 19. The method of claim 16, wherein said first data structure comprises a
2 data structure that is equivalent to at least a portion of said second data structure.

1 20. The method of claim 19, wherein said reference is a base address of
2 said second data structure.

1 21. The method of claim 16, wherein
2 said first and said second data descriptor records each include
3 at least one addressing field, and
4 a type field, wherein
5 said type field is configured to indicate a data structure type of
6 a data storage structure, and
7 said data storage structure is a data structure described by said
8 data descriptor record.

1 22. A computer system comprising:
2 a processor;
3 computer readable medium coupled to said processor; and
4 computer code, encoded in said computer readable medium, configured to
5 cause said processor to transfer data by virtue of causing said processor
6 to:
7 store said data in a first data structure, wherein
8 said first data structure is in a first data structure format,
9 said first data structure format is defined by a first data
10 descriptor record associated with a first process, and
11 said first data structure occupies a memory space;
12 pass a reference to said memory space from said first process to a
13 second process; and
14 read said data from a second data structure using said reference,
15 wherein
16 said second data structure is in a second data structure format,
17 said second data structure format is defined by a second data
18 descriptor record associated with said second process,
19 and

20 said second data structure occupies at least a portion of said
21 memory space.

1 23. The computer system of claim 22, wherein said first and said second
2 data structures are co-extensive.

1 24. The computer system of claim 22, wherein said first and said second
2 data structure formats differ.

1 25. The computer system of claim 22, wherein said first data structure
2 comprises a data structure that is equivalent to at least a portion of said second data
3 structure.

1 26. The computer system of claim 25, wherein said reference is a base
2 address of said second data structure.

1 27. The computer system of claim 25, wherein
2 said first and said second data descriptor records each include
3 at least one addressing field, and
4 a type field, wherein
5 said type field is configured to indicate a data structure type of
6 a data storage structure, and
7 said data storage structure is a data structure described by said
8 data descriptor record.

1 28. A computer program product encoded in computer readable media,
2 said computer program product configured as an operating system, said computer
3 program product comprising:
4 a first set of instructions, executable on a computer system, configured to store
5 said data in a first data structure, wherein
6 said first data structure is in a first data structure format,

7 said first data structure format is defined by a first data descriptor
8 record associated with a first process, and
9 said first data structure occupies a memory space;
10 a second set of instructions, executable on said computer system, configured to
11 pass a reference to said memory space from said first process to a
12 second process; and
13 a third set of instructions, executable on said computer system, configured to
14 read said data from a second data structure using said reference,
15 wherein
16 said second data structure is in a second data structure format,
17 said second data structure format is defined by a second data descriptor
18 record associated with said second process, and
19 said second data structure occupies at least a portion of said memory
20 space.

1 29. The computer program product of claim 28, wherein said first and said
2 second data structures are co-extensive.

1 30. The computer program product of claim 28, wherein said first and said
2 second data structure formats differ.

1 31. The computer program product of claim 28, wherein said first data
2 structure comprises a data structure that is equivalent to at least a portion of said
3 second data structure.

1 32. The computer program product of claim 31, wherein said reference is a
2 base address of said second data structure.

1 33. The computer program product of claim 28, wherein
2 said first and said second data descriptor records each include
3 at least one addressing field, and
4 a type field, wherein

5 said type field is configured to indicate a data structure type of
6 a data storage structure, and
7 said data storage structure is a data structure described by said
8 data descriptor record.

1 34. A method of transferring data comprising:
2 storing said data in a first data structure, wherein said first data structure is in a
3 first data structure format;
4 copying said data from said first data structure to a second data structure,
5 wherein said second data structure is in a second data structure format
6 and said copying includes re-formatting said data from said first data
7 structure format to said second data structure format; and
8 reading said second data structure.

1 35. The method of claim 34, wherein said re-formatting is performed just-
2 in-time.

1 36. The method of claim 34, wherein said copying comprises:
2 passing said data between a first task and a second task by performing a fast-
3 path message copy.

1 37. The method of claim 36, wherein said performing said fast-path
2 message copy comprises:
3 copying said message from a memory space of said first task to a memory
4 space of said second task.

1 38. The method of claim 34, wherein said copying comprises:
2 passing data between a first task and a second task by performing a message
3 copy.

1 39. The method of claim 38, wherein said performing said message copy
2 comprises:
3 copying said message from said first task to said thread control block/message
4 structure;
5 waiting for said thread to be queued to said thread queue; and
6 copying said message from said thread control block/message structure to said
7 second task.

1 40. The method of claim 36, wherein said first task acts as a client task and
2 said second task acts as a server task.